



May 13, 2021
Public Service Commission
P.O. Box 7854
Madison, WI 53707-7854
Re: Roadmap to Zero Carbon Investigation, Docket No. 5-EI-158

On behalf of RMI (formerly Rocky Mountain Institute), we respectfully submit these comments in Docket No. 5-EI-158.

About RMI

RMI is an independent, non-partisan, non-profit organization whose mission is to transform the global energy system to secure a clean, prosperous, zero-carbon future for all. Since our founding in 1982, we have grown to over 300 staff working on four continents with a global reach. Our initiatives include researching the business models, policies, technologies, and financing mechanisms necessary to decarbonize the buildings and power sectors and advance an equitable clean energy transition.

Introduction & Summary

As the Commission investigates approaches to developing “a roadmap to achieving zero carbon electricity” that produces “the economic and environmental benefits the transition can provide,” it must consider how to bring utilities and utility programs into alignment with Wisconsin’s climate commitments.¹ The three issues we have identified as essential to the Commission’s consideration of Wisconsin’s transition to zero-carbon electricity are as follows:

- 1. Align electric utilities’ capital investment priorities with their carbon reduction goals;**
- 2. Prioritize efficient electric heat pumps in the Focus on Energy programs;**
- 3. Incorporate natural gas (which we will refer to as gas) system planning into this proceeding.**

The Commission is empowered, under its existing statutory authority, to act on each of these three issues in order to ensure Wisconsin’s energy transition realizes the economic and environmental benefits of decarbonization while maintaining reliability and affordability for Wisconsin ratepayers.

1. Align electric utilities’ capital investment priorities with their carbon reduction goals.

As the Commission notes in its Memorandum accompanying the Notice of Investigation, Wisconsin’s five largest investor-owned electric utilities have each set zero-carbon goals by 2050. Most have also set interim carbon reduction goals by 2030. As explained more fully below, Wisconsin utilities should stop investing in their fossil fuel fleets and make plans to refinance and retire existing fossil fuel plants.

RMI analysis of utility-reported data² shows that while each of the five utilities are making progress toward reducing emissions, most were not on track to meet their goals as of 2019, especially in the context of trends in utility investments and operations.

¹ Public Service Commission of Wisconsin, Proceeding No. 5-EI-158, Notice of Investigation at 1.

² RMI recently published its Utility Transition Hub, available at <https://utilitytransitionhub.rmi.org/>. The tool enables investors, regulators, utilities, and other stakeholders to track and compare trends in investment, operations, policies, and more that drive future emissions outcomes for FERC Form 1-reporting entities.



Utility	2030/2050 emissions reduction goals	Undepreciated plant balance in rate base of steam (mostly coal) assets	Trend in total generation from fossil plants
Northern States Power Company (Xcel)	80% / 100%	N/A	N/A
Madison Gas & Electric Company	None / 100%	2005: \$182/kW 2019: \$859/kW A 372% increase	2005: 99% 2019: 84% A 15% decrease
Wisconsin Electric Power Company (We Energies)	70% / 100%	2005: \$238/kW 2019: \$803/kW A 237% increase	2005: 74% 2019: 78% A 5% increase
Wisconsin Power & Light Company (Alliant)	50% / 100%	2005: \$198/kW 2019: \$991/kW A 400% increase	2005: 97% 2019: 87% A 10% decrease
Wisconsin Public Service Corporation	70% / 100%	2005: \$188/kW 2019: \$1,001/kW A 432% increase	2005: 97% 2019: 90% A 7% decrease

Since 2019, progress toward decarbonization has accelerated, with several utilities announcing significant new renewable energy and energy storage projects as well as additional coal retirements, such as WE Energies' South Oak Creek facility. This progress made by Wisconsin's five largest investor-owned utilities has dramatically reduced direct CO₂ emissions over the past 15 years, from 45.1 MMT in 2005 to just 15.6 MMT in 2019. Much of this overall reduction is due to coal-to-gas switching, as no utility decreased its overall fossil generation by more than 15% over the same timeframes. To achieve their stated emissions goals and Wisconsin's climate commitments, utilities cannot continue to depend on switching from one fossil fuel to another and instead must aggressively reduce fossil fuel use. Unfortunately, Wisconsin's investor-owned utilities have dramatically increased their investments in fossil fuel infrastructure. For example, they have doubled or, in some cases, quadrupled investment in their remaining coal plants between 2005 and 2019.

Despite the incompatibility of these fossil fuel investments with utilities' or Wisconsin's climate goals, under the traditional regulatory construct utilities would either have to recover these investments through higher rates for customers or face reduced earnings for shareholders. Clearly, the first task is to stop investing in (or adding to) the existing fossil fleet, with any capital additions in coal or gas receiving the strictest regulatory scrutiny. For existing investments, ratepayer-backed securitization may be needed to enable Wisconsin's energy transition while protecting customers. Securitization, which has already been used to lower bills associated with the Pleasant Prairie plant, offers the opportunity to refinance pollution control equipment on coal plants that, in hindsight, were unwise investments. Not only could securitizing such assets achieve significant cost savings for customers, but it would also return cash immediately to utilities for redeployment into the zero-carbon assets they need to meet their goals.

The PSC should also take initiative on electric utility business model reform, including adjustments to the cost-of-service model to allow for revenue decoupling, shared savings mechanisms, performance incentives, and more. The Commission should seize the opportunity to update the processes used for procuring new resources and to ensure that utility investments are prudent and in customers' best interests. Best-practice characteristics of utility procurement practices³ include:

³ <https://rmi.org/how-to-build-ceps>



- All-source: Ensuring that utilities do not attempt to procure specific fuels or types of generation, but rather are selecting for optimal portfolios of utility-scale and distributed resources that capture the value of interaction between resources;
- Objective-aligned: Enabling investments to address diverse values (e.g. resilience, decarbonization, economic development) that may be jurisdiction-specific; and
- Least-regrets: Limiting the risks of greater-than-anticipated costs of meeting system needs by capturing the benefits of competition and declining costs of new technologies.

2. Prioritize efficient electric heat pumps in Focus on Energy programs.

Wisconsin’s Energy Priorities Law strongly supports prioritization of heat pumps.

Because of advances in heat pump technology and cost-effectiveness, the Commission must reconsider the treatment of heat pumps versus conventional alternatives in utility-funded programs. Wisconsin’s Energy Priorities Law holds that: “In meeting energy demands, the policy of the state is that, to the extent cost-effective and technically feasible, options be considered based on the following priorities, in the order listed: (a) Energy conservation and efficiency. (b) Noncombustible renewable energy resources. (c) Combustible renewable energy resources. (d) Nonrenewable combustible energy resources.”⁴ Because heat pumps installed today are more efficient than fossil heating appliances, will be powered over their lifecycle increasingly by noncombustible renewable electricity, are technically feasible, and are cost-effective in key applications, heat pumps clearly merit prioritization under the law.⁵

Heat pumps help customers control their energy use and demand.

Heat pumps will enable customers to take advantage of other cost-saving opportunities such as time-of-use electricity rates, demand response programs, and self-generation opportunities. Modern heat pumps – especially heat pump water heaters – provide customers with flexibility in energy consumption, allowing them to consume electricity when it is cheapest for them. This is a cost saving opportunity for customers and utilities as it can mitigate the need for additional electricity infrastructure.

The Commission has the authority to set Focus on Energy priorities.

In overseeing Focus on Energy, the Commission is authorized to “set or revise goals, priorities, and measurable targets.”⁶ The Commission is further obliged to “give priority to programs that moderate the growth in electric and gas demand and usage, facilitate markets and assist market providers to achieve higher levels of energy efficiency.”⁷ Under these authorities, the Commission can and should realign Focus on Energy’s incentives to take advantage of the increased efficiency and environmental benefits of heat pumps relative to conventional heating appliances. While heat pumps may directly increase electric demand, they reduce gas and overall energy demand due to their high efficiency. In the context of Wisconsin’s climate goals and the Commission’s mandate, it should reflect the potential energy and lifetime emissions savings from fuel switching in energy efficiency programs.

The benefits of heat pumps are particularly significant for customers currently using resistance electric heating, propane, or fuel oil. Transitioning these customers’ homes to electric heat pump technology will likely provide cost and emissions savings while developing a heat pump market that can be cost

⁴ Wis. Stats. 1.12 (4)

⁵ <https://rmi.org/its-time-to-incentivize-residential-heat-pumps/>

⁶ Wis. Stats.196.374 (3) (b) 1.

⁷ Wis. Stats.196.374 (3) (b) 1.



competitive with gas heating. Market development and customer education around the benefits of heat pumps will be key to realizing the economic and environmental benefits of Wisconsin’s energy transition.

3. Incorporate gas system planning into this proceeding.

Building emissions need to fall in Wisconsin.

Fossil fuels burned in Wisconsin homes and businesses – primarily for heating – produced roughly 15 million metric tons of CO₂ emissions in 2017, 15% of all energy-related emissions in the state. Since the year 2000, these emissions have not declined, indicating that existing energy efficiency programs are insufficient to dramatically reduce building emissions. More than 80% of Wisconsin households rely on fossil fuels for heating, mostly gas.⁸ To achieve Governor Evers’ commitment to uphold the goals of the Paris Agreement, emissions from fuels burned in Wisconsin buildings must fall significantly. This means reducing the volumes of fossil fuels delivered to and consumed by Wisconsin customers and planning for climate-aligned alternatives.

Some decarbonization pathways for buildings focus on biomethane, synthetic methane, and hydrogen distributed to buildings – often referred to as “renewable natural gas”. However, studies by the American Gas Foundation,⁹ Sierra Club,¹⁰ and the Natural Resource Defense Council,¹¹ all show that “renewable natural gas” is unlikely to address building emissions at scale, given the limited supply of biomethane and high costs of synthetic gases. Thus, in order to meet Wisconsin’s climate goals, space- and water-heating end uses currently served by gas must transition to heat pumps powered by a highly renewable grid.

Reducing building emissions through reductions in fossil fuel consumption has significant consequences for both gas and electric system long-term planning as gas consumption declines and electric consumption rises due to electrification of the transportation and heating sectors. A “roadmap to achieving zero carbon electricity that analyzes the full range of considerations” thus requires evaluation of both the future of Wisconsin’s gas infrastructure and the impacts of electrification on the grid.¹²

The Commission should investigate the prudence of continued investment in gas infrastructure.

Given the reductions in fossil fuel consumption needed to allow Wisconsin to meet Governor Evers’ climate commitments, the Commission must re-evaluate the prudence of continued investment in the gas system. As total gas consumption declines, so will utilization of existing gas delivery infrastructure, creating upward pressure on volumetric gas rates. Failure to comprehensively plan for reduced gas throughput—whether driven by policy or market forces—risks stranding customers least able to afford the up-front investment in electrification on an increasingly unaffordable gas system. In order to protect ratepayers from this outcome, the Commission will need to restructure its decision-making around new gas system investment to take into account declining demand in addition to traditional considerations of safety and reliability.

In particular, policies governing new investment in extension of the gas system to new customers and expansion of the system’s capacity should be re-evaluated given the risk of declining system utilization driven by future climate action. As investment and cost recovery are currently designed, gas utilities risk being unable to recover the full costs of investments they make or requiring substantial escalation of gas

⁸ <https://rmi.org/insight/the-impact-of-fossil-fuels-in-buildings/>

⁹ <https://www.gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>

¹⁰ <https://www.sierraclub.org/maine/blog/2020/07/sierra-club-report-myth-renewable-natural-gas>

¹¹ <https://www.nrdc.org/experts/merrian-borgeson/report-renewable-gas-pipe-dream-or-climate-solution>

¹² Public Service Commission of Wisconsin, Proceeding No. 5-EI-158, Notice of Investigation at 1.



volumetric rates to satisfy future revenue requirements. In light of these risks, the Commission should seriously consider reducing or eliminating line extension allowances (i.e., contributions in aid of construction), requiring consideration of non-pipe alternatives to capacity expansion investments, and shortening depreciation timelines for new investments in alignment with climate commitments.

Electrification must be included in plans for zero-carbon electricity.

The adoption of heat pumps and electric vehicles is critical to incorporate in the Commission's evaluation of Wisconsin's pathways to zero-carbon electricity. As more end uses are served by electricity replacing gas, propane, or oil, use of the electricity system will need to increase. This can have cost benefits for electric ratepayers as fixed costs are spread over a larger volume of kWh sales, thereby minimizing the rate impact of fixed costs. But it can also add new infrastructure requirements, potentially involving substantial transmission and distribution system upgrades to accommodate winter peaks. The Commission must plan to minimize the rate impacts of electrification and ensure electric grid upgrades are conducted cost-effectively.

Furthermore, with greater reliance on electricity for heat and transportation comes an opportunity and imperative to improve the resilience of energy service. Today's electricity and gas systems are both highly reliable, but in instances of severe service disruption both may be interrupted. In most cases, neither gas nor electric heating equipment functions during power outages. With both increased prominence of all-electric buildings and greater incidence of natural disasters, utilities and the Commission can pursue greater resilience through higher adoption of site-level solar and storage, community microgrids, and/or advanced grid controls which enable segmentation of the electric grid to isolate outages. Other resilience measures include physical grid hardening, which can reduce the incidence of outages during natural disasters. These efforts can best be implemented in concert with renewable electricity planning.

Conclusion

By aligning electric utilities' capital investment priorities with their carbon reduction goals, prioritizing efficient electric heat pumps in Focus on Energy programs, and incorporating gas system planning into plans to decarbonize Wisconsin's electric grid, the Commission will be able to develop a comprehensive roadmap to achieving zero-carbon electricity and fulfill its statutory responsibilities under Wisconsin's Energy Priorities Law. We urge the Commission to prioritize these three issues in its investigation of Wisconsin's clean energy transition.

Sincerely,

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